REMARKS

Reconsideration of the present application is requested. Apparatus claims 1-15, 25-33 and 38 have been canceled, and method claims 39-56 have been added. Accordingly, claims 16-24, 34-37, 39-56 are pending. All claims are method claims and are in condition for allowance. Action to that effect is respectfully requested.

In the Final Office action mailed 7/18/2003, a variety of rejections were presented, and significant issue was taken to the fact that the claims examined were directed to an apparatus rather than to a method. Applicants do not agree that any of the rejections were proper, but in order to expedite issuance of a patent and without prejudice to their presentation in a continuing application, the rejected apparatus claims have been canceled. All pending claims are now method claims.

While no rejections of the pending claims are currently outstanding, it is important to note that Gomberg, for example, is not directed to the detection of hydrogenous material. Rather Gomberg is directed to detection of scattering from elemental nuclei which have resonance in their scattering cross-sections, specifically carbon, nitrogen, oxygen, sulfur, potassium and beryllium. (see col. 6, line 58- col. 7, line 10) These atoms (C, N, O, S, K, Be) all have nuclei of substantially greater mass than the mass of a neutron. As a result, a neutron colliding with these heavier atoms loses little of its speed and can backscatter to the detector in a single scattering event. Because the neutron would travel at high speed both to and from the scattering target and because it undergoes only a single scattering event, the detection events for these interactions occur rather quickly. More particularly, the relevant time scale for these events is the round-trip travel time for a fast neutrons. Gomberg specifically describes emitting nanosecond bursts and then limiting his detection based on this round trip travel time of the bursts. ("[T]he detector 20

is energized in synchrony so as to detect only those neutrons in a particular burst and having a transit time equal to the interval required to travel from the source to the object 22 being interrogated and back to the detector." (col. 11, line 35-40).

By contrast, hydrogen has a nucleus with a mass on par with the mass of a neutron. This is significant because scattering events with hydrogen significantly slow or "thermalize" the neutron. Also, due to their similarities in mass, a single scattering event with hydrogen does not result in a directly backscattered neutron. In order for a neutron to backscatter from a target and interact with hydrogen, it must undergo multiple scattering events. Thus, because the neutron has been slowed and has undergone multiple scattering events, these detection events would occur at significantly later times relative to the interactions with the heavier elements (C, N, O, S, K, Be) that are the focus of Gomberg.

Reconsideration of the present application, as amended, is respectfully requested. All pending claims are allowable, and the undersigned would welcome a telephone call to discuss any matter that would expedite prosecution of the present application.

Respectfully Submitted,

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